

DEFECT INSPECTION OF EXTREME ULTRAVIOLET LITHOGRAPHY MASKS  
AND THE LIKE

ABSTRACT OF THE DISCLOSURE

5 A dark-field imaging method for detecting defects in reflective lithography  
masks (e.g., extreme ultraviolet (EUV) masks) used, e.g., in processes for the  
fabrication of microelectronic devices. A mask blank is coated with a photoresist  
layer having a fluorescent dye incorporated therein. The photoresist layer is exposed  
to a source of radiation (e.g., EUV radiation or glancing soft X-rays). In areas of the  
mask blank having defects the combined direct and reflected radiation will be  
10 insufficient fully to expose the photoresist layer. After development, photoresist will  
remain on the mask blank surface in areas corresponding to defects. Illumination with  
the excitation wavelength of the fluorescent dye reveals the location of any remaining  
photoresist, which can be detected using an optical microscope, thereby to detect  
defects in the mask blank.